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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/046,323 | 01/14/2002 | Martin A. Cotton | 2654-015 | 2812 |

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| EXAMINER |
|---|
| NORRIS, JEREMY C |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2827 | |

DATE MAILED: 03/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/046,323 | COTTON, MARTIN A. | |
| | Examiner | Art Unit | |
| | Jeremy C. Norris | 2827 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *28 May 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *19-21* is/are allowed.

6)☒ Claim(s) *1-18,22 and 23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *0402* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6, 9-18, 22 and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by US 5,677,515 (hereafter Selk).

Selk discloses, referring to figure 1, a laminated signal line comprising: two or more layers of non-conducting material (18,14); one or more internal conductors (12), each of the internal conductors being sandwiched between adjacent ones of the two or more layers of non-conducting material; and a conductive shield comprising: a top conductor layer (20) disposed atop the two or more layers of non- conducting material, and opposed side wall conductors (24), electrically connected to the top conductor layer, wherein the opposed side wall conductors are formed on walls of a pair of trenches (26, 27) that are formed through the two or more layers of non-conducting material on opposed sides of the one or more internal conductors [claim 1], wherein the conductive shield further comprises: a bottom conductor layer (22) disposed beneath the two or more layers of non- conducting material, the bottom conductor layer being electrically connected to the top conductor layer and the opposed side wall conductors

[claim 2] wherein the top conductor layer, the opposed side wall conductors, and the bottom conductor layer are unitarily formed so that the conductive shield surrounds the one or more internal conductors [claim 3], wherein the one or more internal conductors and the conductive shield are formed substantially of copper (see col. 2, lines 45-68) [claim 4], wherein the pair of trenches are substantially parallel to one another [claim 5] wherein the top conductor layer and the opposed side wall conductors are unitarily formed so that the conductive shield surrounds the one or more internal conductors [claim 6].

Additionally, Selk discloses, a laminated conductive tube comprising: one or more layers of non-conducting material (14, 18); and a shield comprising: a top conductor layer (20) disposed atop the one or more layers of non- conducting material, a bottom conductor layer (22) disposed beneath the two or more layers of non-conducting material, and opposed side wall conductors (24), electrically connected to the top and bottom conductor layers, wherein the opposed side wall conductors are formed on walls of a pair of trenches (26, 27) that are formed adjacent one another through the two or more layers of non-conducting material [claim 8], wherein the top conductor layer, the opposed side wall conductors, and the bottom conductor layer are unitarily formed so that the shield surrounds the one or more internal conductors (12) [claim 9], wherein the shield is formed substantially of copper (see col. 2, lines 40-68) [claim 10], wherein the pair of trenches are substantially parallel to one another [claim 11].

Similarly, Selk discloses, a printed circuit board comprising one or more laminated signal lines, wherein each of the signal lines comprises: two or more layers of non-conducting material (14, 18); one or more internal conductors (12), each of the internal conductors being sandwiched between adjacent ones of the two or more layers of non-conducting material; and a conductive shield comprising: a top conductor layer (20) disposed atop the two or more layers of non- conducting material, and opposed side wall conductors (24), electrically connected to the top conductor layer; wherein the opposed side wall conductors are formed on walls of a pair of trenches (26, 27) that are formed through the two or more layers of non-conducting material on opposed sides of the one or more internal conductors [claim 12], wherein the conductive shield further comprises: a bottom conductor layer (22) disposed beneath the two or more layers of non- conducting material, the bottom conductor layer being electrically connected to the top conductor layer and the opposed side wall conductors [claim 13], wherein the top conductor layer, the opposed side wall conductors, and the bottom conductor layer are unitarily formed so that the conductive shield surrounds the one or more internal conductors [claim 14], wherein the one or more internal conductors and the conductive shield are formed substantially of copper (see col. 2, lines 40-68) [claim 15], wherein the top conductor layer and the opposed side wall conductors are unitarily formed so that the conductive shield surrounds the one or more internal conductors [claim 16], further comprising: a plated-through hole (80) connected to one end of one of the internal conductors, the plated-through hole being formed through the printed circuit board [claim 18].

Moreover, Selk discloses referring to figure 3a, a method of forming a shielded waveguide in a laminated printed circuit board, the method comprising: forming a bottom shield layer (50) on a non-conductive substrate (48); forming a first non-conductive layer (62) over the bottom shield layer, patterning an internal conductor (44) atop the first non-conductive layer; forming a second non-conductive layer (66) over the patterned internal conductor and the first non-conductive layer; forming a top shield layer (68, 70) atop the second non-conductive layer; forming a pair of trenches (72, 74) through the first and second non-conductive layers on opposed sides of the internal conductor; and disposing conductive material on walls of the trenches, extending from the bottom shield layer to the top shield layer [claim 22].

Furthermore, Selk discloses, referring to figure 1) an inductor comprising: one or more layers of non-conducting material (14, 18) with a pair of trenches (26, 27) formed adjacent one another through the one or more layers of non-conducting material; a conductive tube, wherein the conductive tube comprises: a top conductor layer (20) disposed atop the one or more layers of non- conducting material, between the pair of trenches, a bottom conductor layer (22) disposed beneath the two or more layers of non-conducting material, between the pair of trenches, and opposed side wall conductors (24), electrically connected to the top and bottom conductor layers, wherein the opposed side wall conductors are formed on walls of the pair of trenches; a first end lead formed as an extension of the top conductor layer, and a second end lead formed as an extension of the bottom side conductor [claim 23].

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 7 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Selk in view of US 5,659,953 (hereafter Crane).

Selk discloses the claimed inventions as described above including the internal conductor having a portion adapted for connection to an electrical device via soldering (see col. 3, lines 25-45). Selk does not, however, specifically state that these portions comprise connection pads. However, it is well known in the art to use connection pads on signal line portions that are to be connected to pins and the like via soldering as evidenced by Crane (see figure 10, e.g. 13c). Therefore, it would have been obvious, to one having ordinary skill in the art, at the time of invention, to provide connection pads at the connection portion of the internal conductor of Selk. The motivation for doing so would have been to ensure a reliable electrical and mechanical connection.

***Allowable Subject Matter***

Claims 19-21 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 19 states the limitation "a bottom shield layer, electrically connected to the conductive side wall, buried within the printed circuit board at a level beneath the further buried level". This limitation, in conjunction with the other claimed limitations was neither found to be disclosed in, nor suggested by the prior art.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 5,828,555 Itoh,

US 6,444,922 Kwong.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy C. Norris whose telephone number is 703-306-5737. The examiner can normally be reached on Mon.-Th., 9AM - 6:30 PM and alt. Fri. 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on 703-305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-0725 for regular communications and 703-308-0725 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JCSN
March 12, 2003

DAVID L. TALBOTT
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800